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OPTIMIZED CRITICAL POWER IN A FUEL
BUNDLE WITH PART LENGTH RODS

ABSTRACT OF THE DISCLOSURE

SA 5 In a fuel bundle for use in the core of a boiling
water nuclear reactor, part length rods having a tendency to
reduce pressure drop are used in combination with spacers and
spacer attached devices tending to restore pressure drop to
improve critical power. The addition of the part length rods
10 has the advantage of lowering the pressure drop. Attached
devices substantially recapture the pressure drop. Exemplary
spacer attached mechanisms for the recapture of pressure drop
are set forth including vanes - preferably swirl vanes on the
spacers, decreasing the spacer pitch to increase the total
15 number of spacers in the upper two phase region of the fuel
bundle, increasing the vertical height of the spacers, and
increasing the thickness of the metal from which the spacers
are constructed. Two classes of separation devices are
disclosed for placement in the volume overlying the end of the
20 partial length fuel rods. A first type of device fits to the
end of the part length rods and is primarily intended for
preventing water passing along the surface of the part length
rod adjacent the end of the part length rod from entering the
volume overlying the part length fuel rod. A second type of
25 device resides in the volume overlying the part length rod. In
either case, critical power is improved.

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